

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of:

VISCA

Group Art Unit: Not yet assigned

Application No.: New Application

Examiner: Not yet assigned

Filed: May 4, 2001

Attorney Dkt. No.: 108910-00032

For: USE OF (PER)FLUOROPOLYETHER DERIVATIVES IN THE TREATMENT OF  
SUBSTRATA HAVING A LOW SURFACE ENERGY

**PRELIMINARY AMENDMENT**

Commissioner for Patents  
Washington, D.C. 20231

May 4, 2001

Sir:

Prior to calculation of the filing fee and prior to initial examination of the application, please amend the above-identified application as follows:

**IN THE CLAIMS:**

Please amend claims 3-8, and 10-14 as follows. A copy of the marked up original claims is attached to this response showing the changes as set forth in amended 37 CFR 1.121.

3. (Amended) Use according to claim 1, wherein in structure (II) the other end group is of T-O- type, wherein T is a (per)fluoroalkyl group selected from: -CF<sub>3</sub>, -C<sub>2</sub>F<sub>5</sub>,

-C<sub>3</sub>F<sub>7</sub>, -CF<sub>2</sub>Cl, -C<sub>2</sub>F<sub>4</sub>Cl, -C<sub>3</sub>F<sub>6</sub>Cl; optionally one or two F atoms, preferably one, can be replaced by H.

4. (Amended) Use according to claim 1, wherein the compounds (I) and (II) are used in mixture.

5. (Amended) Use according to claim 1, wherein the perfluoropolyether derivatives have formula (I) with R<sub>f</sub> having structure (3).

6. (Amended) Use according to claim 1, wherein the substrata having a low surface energy are selected from the groups consisting of:

polytetrafluoroethylene, polyolefins, polyolefine elastomers, thermoplastic copolymers of tetrafluoroethylene, thermoplastic homopolymers and copolymers of vinylidenfluoride or of chlorotrifluoroethylene.

7. (Amended) Use according to claim 1, wherein the (per)fluoropolyether derivatives are applied on the substrata by brushing, spraying, padding.

8. (Amended) Use according to claim 1, wherein the (per)fluoropolyether derivatives are used in formulations comprising solvents or water/solvent mixtures.

10. (Amended) Use according to claim 8, wherein as water/solvent mixtures, ketone/water or alcohol/water mixtures in a ratio by volume between 10:90 and 90:10 are used.

11. (Amended) Use according to claim 8, wherein in the formulations the concentration of the (per)fluoropolyethers of formula (I) and (II) is generally in the range 0.1 - 30% by weight.

12. (Amended) Use according to claim 1, wherein the amount of (per)fluoropolyether compound applied on the substratum surface is in the range 0.1 - 20 g/m<sup>2</sup>.

13. (Amended) Use according to claim 1, wherein the polar solvent is combined with water, optionally in the presence of a silanization catalyst.

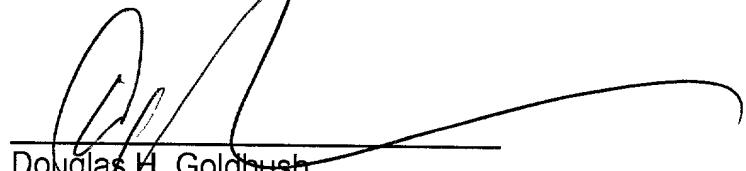
14. (Amended) Use according to claim 1, wherein a thermal treatment cycle to favor the crosslinking is used.

#### REMARKS

Claims 1-14 are pending in this application. By this Amendment, claims 3-8 and 10-14 are amended to delete multiple dependency. No new matter is contained in the amendments. Timely examination on the merits is respectfully requested.

Please charge any fee deficiency or credit any overpayment to Deposit Account  
No. 01-2300.

Respectfully submitted,



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Enclosure: Marked-up Copy of Amended Claims

MARKED-UP COPY OF AMENDED CLAIMS

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wing structures:

1)  $-\text{(CF}_2\text{O)}_{a'}-\text{(CF}_2\text{CF}_2\text{O)}_{b'}-$

with  $a'/b'$  comprised between 0.5 and 2, extremes included,  $a'$  and  $b'$  being integers such to give the above mentioned molecular weight;

2)  $-\text{(C}_3\text{F}_6\text{O)}_r-\text{(C}_2\text{F}_4\text{O)}_b-\text{(CFXO)}_t-$

with  $r/b = 0.5-2.0$ ;  $(r+b)/t$  is in the range 10-30,  $b$ ,  $r$  and  $t$  being integers such as to give the above mentioned molecular weight,  $X$  has the above indicated meaning;

3)  $-\text{(C}_3\text{F}_6\text{O)}_{r'}-\text{(CFXO)}_{t'}-$

$t'$  can be 0;

when  $t'$  is different from 0 then  $r'/t' = 10-30$ ,  $r'$  and  $t'$  being integers such to give the above mentioned molecular weight;  $X$  has the above indicated meaning;

- Claim 1*
3. Use according to [claims 1-2], wherein in structure (II) the other end group is of T-O- type, wherein T is a (per)fluoroalkyl group selected from:  $-\text{CF}_3$ ,  $-\text{C}_2\text{F}_5$ ,  $-\text{C}_3\text{F}_7$ ,  $-\text{CF}_2\text{Cl}$ ,  $-\text{C}_2\text{F}_4\text{Cl}$ ,  $-\text{C}_3\text{F}_6\text{Cl}$ ; optionally one or two F atoms, preferably one, can be replaced by H.

- Claim 2*
4. Use according to [claims 1-3], wherein the compounds (I) and (II) are used in mixture.

- Claim 3*
5. Use according to [claims 1-4], wherein the perfluoropolyether derivatives have formula (I) with  $R_f$  having structure

re (3).

*Claim 1*

6. Use according to [claims 1-5], wherein the substrata having a low surface energy are selected from the groups consisting of:

polytetrafluoroethylene, polyolefins, polyolefine elastomers, thermoplastic copolymers of tetrafluoroethylene, thermoplastic homopolymers and copolymers of vinylidene-fluoride or of chlorotrifluoroethylene.

*Claim 1*

7. Use according to [claims 1-6], wherein the (per)fluoro-polyether derivatives are applied on the substrata by brushing, spraying, padding.

*Claim 1*

8. Use according to [claims 1-7], wherein the (per)fluoropoly-ether derivatives are used in formulations comprising solvents or water/solvent mixtures.

9. Use according to claim 8, wherein the solvents are polar and are selected from the following classes:

aliphatic alcohols having from 1 to 6 carbon atoms; aliphatic glycols having from 2 to 8 carbon atoms, optionally having an esterified hydroxyl; ketones or esters having from 3 to 10 carbon atoms.

*Claim 8*

10. Use according to [claims 8-9], wherein as water/solvent mixtures, ketone/water or alcohol/water mixtures in a ratio by volume between 10:90 and 90:10 are used.

*Claim 8*

11. Use according to [claims 8-10], wherein in the formulations

the concentration of the (per)fluoropolyethers of formula

(I) and (II) is generally in the range 0.1-30% by weight.

12. Use according to [claims 1-11], wherein the amount of (per)-  
fluoropolyether compound applied on the substratum surface  
is in the range 0.1-20 g/m<sup>2</sup>.

13. Use according to [claims 1-12], wherein the polar solvent is  
combined with water, optionally in the presence of a si-  
lanization catalyst.

14. Use according to [claims 1-12], wherein a thermal treatment  
cycle to [favour] the crosslinking is used.